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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/936,824

09/18/2001

Olivier Gerard

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12/14/2004

PHILIPS INTELLECTUAL PROPERTY & STANDARDS

P.O. BOX 3001

BRIARCLIFF MANOR, NY 10510

EXAMINER

TABATABAI, ABOLFAZL

ART UNIT

PAPER NUMBER

2625

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/936,824

**Applicant(s)**

GERARD ET AL.

**Examiner**

Abolfazi Tabatabai

**Art Unit**

2625

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/12/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### **Claim Rejections - 35 USC § 103**

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1, 6, 11,12 and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mazess et al (U S 5,841,833) in view of Vining et al (U S 6,366,800 B1).

Regarding claim 1, Mazess discloses a method for extracting geometrical data from a 2-D digital image of the spine, comprising steps for determining spine outlines, wherein:

digitizing the spine center line (column 22, lines 33-35) and end points of said spine center line (column 21, lines 33-35);

constructing a 2-D Rectangular-Band around said spine center line (column 11, lines 20-33).

However, Mazess is silent about the specific details regarding the step of:

processing the 2-D Rectangular-Band image data in order to estimate best paths going through selected points for determining the spine outlines.

In the same filed of endeavor (medical image), however, Vining discloses automatic analysis in virtual endoscopy comprising the step of:

processing the 2-D Rectangular-Band image data in order to estimate best paths going through selected points for determining the spine outlines (column 13, lines 36-46 and column 16, lines 8-10).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use estimate best paths going through selected points for determining the spine outline as taught by the Vining in the system of Mazess because Vining provides Mazess an improved system for interactively displaying a three-dimensional rendering of a structure having a lumen and, more particularly, for automatically analyzing such structures for potential abnormalities.

Regarding claim 6, Mazess discloses a method as claimed in one of claim 1, further comprising steps of processing said 2-D rectangular image band image data in order to estimate spine endplates locations using the data of one corresponding found spine outline (column 17, lines 38-41).

Regarding claim 11, Mazess discloses a method as claimed in one of claim 6, further comprising steps of determining points of the spine (column 22, lines 33-35), referred to as corners of vertebrae (column 15, lines 11-15), located at the intersection of the outlines and the endplates (column 17, lines 38-41).

Regarding claim 12, Mazess discloses a method as claimed in claim 11, further comprising steps of digitizing guide points that are set on the corners of the vertebrae to improve the labeling of the nodes (column 15, lines 11-15 and column 17, lines 53-61).

Regarding claim 14, Mazess discloses an imaging system having acquisition means for acquiring images of the spine, having display means to display said images (fig. 1, element 22), having interactive drawing means to digitize the spine center line (column 22, lines 33-35), the end points and guide points 9column 21, lines 33-35), having storage means to store the initial knowledge and database knowledge (column 6, lines 19-23), storage means to store image data, and having processing means to carry out a method as claimed in one of claim 1 (column 11, lines 15-19).

Regarding claim 15, Mazess discloses an imaging system as claimed in claim 14, wherein the processing means comprise a suitably programmed computer of a workstation or a special purpose processor having circuit means (fig. 1, element 18), which are arranged to process the image data, and wherein the display means displays the processed images (fig. 1, element 22).

Regarding claim 16, Mazess discloses an medical examination apparatus having the system of one of claim 14 9column 14, lines 18-21).

Regarding claim 17, Mazess discloses a computer program product comprising a set of instructions for carrying out the method as claimed in one of claim 1 (column 17, lines 14-21).

### **Claim Rejections - 35 USC § 103**

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mazess et al (U S 5,841,833) and Vining et al (U S 6,366,800 B1) as applied to claim 1 above and in further in view of Greenberg et al (U S 6,301,498 B1).

Regarding claim 2, Mazess and Vining are silent about the specific details regarding a method as claimed in claim 1, wherein the steps for constructing the Rectangular-Band comprises:

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constructing, in the 2-D digital image, a 2-D image band, referred to as Rubber-Band, whose center line is a spline representing the spine center line, and unfolding said Rubber-Band for constructing a 2-D Rectangular-Band; and,

calculating the intensities of the points of the Rectangular-Band from the intensities of the corresponding points of the Rubber-Band.

In the same filed of endeavor (medical image), however, Greenberg discloses method of determining carotid artery stenosis using x-ray imagery comprising the step of:

constructing, in the 2-D digital image, a 2-D image band, referred to as Rubber-Band (column 18, lines 6-8), whose center line is a spline representing the spine center line (column 17, lines 1-21), and unfolding said Rubber-Band for constructing a 2-D Rectangular-Band (column 3, lines 50-56); and,

calculating the intensities of the points of the Rectangular-Band from the intensities of the corresponding points of the Rubber-Band (column 5, lines 46-48).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use calculating the intensities as taught by the Greeberg in the system of Mazess because Greenberg provides Mazess an improved system for analyzing the cross-sectional area of reduction of the artery to estimate the extent of stenosis is useful, it is less accurate than a full-scale three-dimensional analysis.

### **Claim Rejections - 35 USC § 103**

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mazess et al (U S 5,841,833) and Vining et al (U S 6,366,800 B1) as applied to claim 1 above and in further view of Grenier et al (U S 5,079,698).

Regarding claim 13, Mazess and Vining are silent about the specific details regarding a method as claimed in one of claim 1, comprising previous normalization of the point gradients within a range of gradient values to compensate for possible undue differences of brightness in regions of the original image.

In the same field of endeavor (medical image), however, Grenier discloses a system for enhancing the contrast of a local area of interest within an electronic image of an object comprising previous normalization of the point gradients within a range of gradient values to compensate for possible undue differences of brightness in regions of the original image (column 13, lines 31-43; column 18, lines 51-59 and column 19, lines 40-42).



It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use previous normalization of point gradients as taught by the Grenier in the system of Mazess because Grenier provides Mazess an improved system to enhanced images for the diagnosis of breast tumor and other breast lesions, the normalization of image has other advantageous, particularly applicable to other forms of nonionizing radiation energy such as ultrasound.

**Allowable Subject Matter**

7. Claims 3-5 and 7-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Citation of Relevant Prior Art**

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Steiger et al (U S 5,483,960) disclose morphometric x-ray absorptiometry (MAX).

Mazess (U S 5,577,089) discloses apparatus and method for analysis of bone morphology.

Kano et al (U S 5,359,513) disclose method and system for detecting of interval change in temporally sequential chest images.

Cinquin et al (U S 5,447,154) disclose method for determining the position of an organ.

**Contact Information**

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ABOLFAZL TABATABAI whose telephone number is (703) 306-5917.

The examiner can normally be reached on Monday through Friday from 9:30 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Mehta Bhavesh M, can be reached at (703) 308-5246.

**Any response to this action should be mailed to:**

Assistant Commissioner for Patents  
Washington, D.C. 20231

**Or faxed to:**

(703) 872-9314 (for *formal* communications; please mark  
"EXPEDITED PROCEDURE")

**Hand delivered responses** should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA. Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 305-4750

Abolfazl Tabatabai

Patent Examiner

Group Art Unit 2625

December 12, 2004

*A-Tabatabai*